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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/601,078	07/20/2000	Masafumi Koide	Q60201	5578

7590

11/06/2003

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EXAMINER

MAKI, STEVEN D

ART UNIT	PAPER NUMBER
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1733

DATE MAILED: 11/06/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/601,078

Applicant(s)

KOIDE, MASAFUMI

Examiner

Steven D. Maki

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12 August 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☒ Claim(s) 10 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

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1) **The finality of the office action dated 12-18-02 has been withdrawn. Claims 1-9 are rejected in a new ground of rejection set forth below. The new ground of rejection continues to use Moseley et al (already of record) as the primary reference and includes newly cited art (e.g. Japan 4-100706).**

2) The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3) **Claims 1, 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moseley et al (US 5669993) in view of Japan '706 (JP 4-100706), Glover et al (US 5238038) and Yamaguchi et al (US 4723584) and optionally Japan '715 (JP 10-138715).**

Moseley et al discloses a tire having a tread comprising blocks wherein each block is **twisted** so that when the block is compressed, the block generates a net torque to reduce the RSAT (residual self aligning torque) of the tire. Figures 12A, 12B illustrate the twisted block as having two twisted slits (two twisted narrow grooves) wherein each twisted slit has a depth less than block height. Hence, Moseley et al substantially discloses the claimed invention in that it discloses use of a twisted block having twisted slits therein to reduce RAST (residual self aligning torque) of the tire.

Moseley et al is silent as the tire having a belt. As to claim 1, it would have been obvious to one of ordinary skill in the art to provide Moseley et al's tire as a pneumatic radial tire such that the pneumatic tire has a belt (a plurality of reinforcing layers in each

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of which cords, which are inclined at a predetermined angle with respect to a tire circumferential direction, are provided parallel to each other) and so that a torque is generated by the block so as to reduce a self alignment torque generated due to the outermost belt ply cords (the cords provided in parallel to each other in an outermost layer reinforcing layer of the plurality of reinforcing layers) in view of (1) Moseley et al's teaching to form the block in a twisted configuration to reduce the residual self aligning torque of the tire and (2) Japan '706's teaching that a pneumatic radial tire generally comprises two belt plies wherein the outermost inclined parallel belt ply cords induce a self aligning torque which should be eliminated to improve straight run performance of the pneumatic radial tire (translation page 34 ½, figure 2). Hence, Moseley et al discloses using a twisted tread element to address the problem of the tire's residual self aligning torque (RSAT). The twisted tread element generates a net torque when compressed (loaded with radially directed force). The net torque generated by the block reduces the tire's self-aligning torque (these two torques are opposite in direction). Although Moseley et al is silent as to what causes the tire's self-aligning torque, Japan '706 teaches that it is known in the tire art that the outermost cords of the belt of a pneumatic radial tire (a well known tire construction) causes a residual aligning torque. One of ordinary skill in the art would have been highly motivated to use Moseley's solution (use of real world twisted block having twisted slit therein to generate net torque for reducing residual self aligning torque of a tire) to solve an existing real world problem (residual self aligning torque caused by cords in belt of pneumatic tire).

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As to the claimed block having a "sipe", Figure 12B illustrates a twisted block having a twisted slit. Although Moseley et al teaches that the twisted block of figure 12B is a twisted version of the real life tread element 48 (figure 14) sold by The Goodyear Tire & Rubber Company under the trade name Invicta GA (L), Moseley et al does not use the word "sipe" to describe the illustrated twisted slits. However, one of ordinary skill in the tire tread art would readily understand that the slits in the block of Moseley are "sipes" since the slits formed in the block, are illustrated as being very narrow and have a depth less than block height. As evidence to support this conclusion, attention is directed to Glover et al and Yamaguchi et al. Glover teaches that narrow grooves in a block having a depth of for example 90% are referred to as sipes. Yamaguchi et al teaches that slits having a narrow width to actually close with each other in the ground contact surface and have a depth such as 70% of groove depth are referred to as "sipes". In any event: It would have been obvious to one of ordinary skill in the art to provide the slits in Moseley's block as "sipes" since Glover et al and Yamaguchi et al teach using sipes in blocks of a tire tread in order to improve traction. The limitation of the sipe being twisted around a first axis and a second axis so as to satisfy  $P1 = 20-80\% W$  and  $P2 = 20-60\% F$  would have been obvious in view of Moseley et al's teaching to twist the entire block including slits therein to reduce RSAT of the tire.

The description of "the sipe is twisted such that a self alignment torque is generated by the block so as to reduce a self alignment torque generated due to the cords provided parallel to each other in an outermost reinforcing layer of the plurality of reinforcing layers" fails to require structure not suggested by the applied prior art. The

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claimed sipe does not generate the torque. In contrast, the claimed block generates the torque. Moseley et al teaches this subject matter since the block is twisted to reduce RSAT. Claim 1 fails to exclude using the external twisted surfaces of the block and the internal twisted surfaces of the block (those defined by the slit / sipe) to generate the torque. This conclusion is consistent with dependent claim 8, which describes a twisted block. Although Moseley et al is silent as to the relationship between the twisted slit and the reduction in RSAT, the twisted slit (twisted sipe) contributes to the reduction in RSAT since the slit (sipe) is twisted along with the block; it being emphasized that the above functional language requires the block to have a capability to generate a torque and that Moseley et al expressly teaches that his block has the capability to generate a torque. In any event: The "limitation" of the sipe being twisted such that a self alignment torque is generated by the block so as to reduce a self alignment torque generated due to the cords provided parallel to each other in an outermost reinforcing layer of the plurality of reinforcing layers" (the twisted slit / sipe contributing to the reduction in RSAT) would have been obvious to one of ordinary skill in the art since (1) Moseley et al teaches that the twisted block rotates so as to generate a torque to reduce self aligning torque of the tire and (2) Japan '715 teaches using sipes to permit a block to rotate so as to generate a torque to reduce self aligning torque of the tire caused by remaining lateral force resulting from the internal structure (belt) of the tire.

As to the blocks being defined by main grooves and lateral grooves, one of ordinary skill in the art would readily appreciate that Moseley et al's blocks are defined by intersecting lateral grooves and main grooves (a block in a tire tread by definition is

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defined by intersecting grooves). In any event: it would have been obvious to use intersecting circumferential grooves and transverse grooves to define Moseley's blocks since the applied secondary art (Japan '706, Glover et al, Yamaguchi et al and the optional Japan '715 teach using intersecting circumferential and transverse grooves to define blocks.

As to claims 8 and 9 (twisted block), Moseley et al clearly teaches this subject matter. See for example the twisted block in figure 12B.

**4) Claims 2-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moseley et al (US 5669993) in view of Japan '706 (JP 4-100706), Glover et al (US 5238038) and Yamaguchi et al (US 4723584) and optionally Japan '715 (JP 10-138715), as applied above and further in view of Lagnier '002 (US 5,783,002).**

As to claims 2-6, it would have been obvious to provide the sipe so as to be wave shaped along its length when viewing a surface parallel to the block surface / wave shaped along its depth when viewing a cross section of the block to improve adhesion of the tire to the road since Lagnier '002 (figure 1) suggest configuring sipes such that they are wavy along the length of the sipe (incision) and along the depth of the sipe (incision) to improve adhesion of the tire to the road and improve irregular wear.

**5) Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Moseley et al (US 5669993) in view of Japan '706 (JP 4-100706), Glover et al (US 5238038) and Yamaguchi et al (US 4723584) and optionally Japan '715 (JP 10-138715), as applied above and further in view of either Japan '805 (JP 62-286805) or Lagnier '190 (WO 96/01190).**

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As to claim 7 (closed twisted sipe), it would have been an obvious alternative to use a closed sipe instead of both end opening sipe in view of either Japan '805's teaching to use a closed sipe instead of a both end opening sipe to improve wear or Lagnier '190's teaching that a closed sipe and a two ended sipe are alternative types of sipes (incisions) to improve grip on snowy, icy or wet roads..

**allowable subject matter**

6) **Claim 10 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.** As can be seen from figures 12A and 12B, Moseley et al teaches twisting the narrow grooves in the *same* direction (instead of the opposite direction) as the direction of twist for the block.

Remarks

7) Applicant's arguments with respect to claims 1-9 have been considered but are moot in view of the new ground(s) of rejection.

Applicant's arguments filed 8-12-03 have been fully considered but they are not persuasive.

On page 2 of the brief, applicant states that "the twisted sipe generates a self alignment torque". Applicant is incorrect. The block generates the torque.

Applicant argues that Moseley et al does not teach that the narrow grooves are twisted such that a self alignment torque is generated by the block. More properly, the narrow grooves (slits) are twisted along with the sidewalls of the block such that a self alignment torque is generated by the block.



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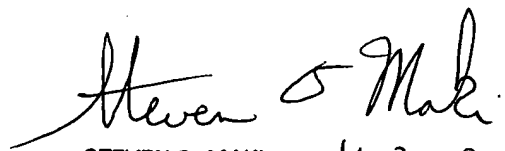
Applicant comments that "the tire disclosed in Moseley uses the twisted block portion in order to counteract the high magnitude residual self-alignment torque caused by the turning of the vehicle". In response, the examiner simply notes that Moseley fails to contain such a teaching.

8) Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven D. Maki whose telephone number is 703-308-2068. The examiner can normally be reached on Mon. - Fri. 7:30 AM - 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on (703) 308-3853. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Steven D. Maki  
November 2, 2003

  
STEVEN D. MAKI  
PRIMARY EXAMINER  
~~GROUP 1300~~  
AV 1733  
11-2-03